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| 10/574,448 | 04/04/2006 | Guofu Zhou | NL 031175 | 9649 |
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| EXAMINER | | | | |
| LAM, VINH TANG | | | | |
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/574,448

Applicant(s)

ZHOU ET AL.

Examiner

VINH T. LAM

Art Unit

2629

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 June 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) 4-17 & 19-20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 18, 21 and 22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 April 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☒ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/S508)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the **first paragraph** of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

1. Claim 1 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Regarding Claim 1, the specification as originally filed has failed to provide support for the recitation of "...the display device having a non-zero voltage associated with an electro-optical state of the picture element to be set, wherein the variable voltages comprise a set of alternating voltages having one of a mean voltage, a root mean square voltage and an average voltage, substantially equal to the non-zero voltage". The specification does not reasonably convey one skill in the art how to make or use applicant claimed invention for "...the display device having a non-zero voltage associated with an electro-optical state of the picture element to be set, wherein the variable voltages comprise a set of alternating voltages having one of a mean voltage, a root mean square voltage and an average voltage, substantially equal to the non-zero voltage".

The following is a quotation of the **second paragraph** of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The limitation of Claim 1, "...the display device having a non-zero voltage associated with an electro-optical state of the picture element to be set, wherein the variable voltages comprise a set of alternating voltages having one of a mean voltage, a root mean square voltage and an average voltage, substantially equal to the non-zero voltage" is not clear.

What does "...non-zero voltage ..." mean?

Is "...non-zero voltage ..." substantially equal to the zero?

According to the Specification, namely [0005], [0008], and [0028], undisputedly disclose that the voltages associated with the display device is substantially equal to zero.

The above limitation is not only rejected under 35 U.S.C. 112 2nd ¶ but also invoked 35 U.S.C. 112 1st ¶ since there is no disclosure of "...the display device having a non-zero voltage associated with an electro-optical state of the picture element to be set, wherein the variable voltages comprise a set of alternating voltages having one of a mean voltage, a root mean square voltage and an average voltage, substantially equal to the non-zero voltage" in the originally filed specification.

To further advance prosecution, the Examiner interprets "non-zero voltage" as any voltage associated with the display.

Appropriate correction is required.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to

be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

3. Claim 1 is provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over Claim 1 of **Patent No. 7359108**. Although the conflicting claims are not identical, they are not patentably distinct from each other because:

| Instant Application 10/57448 | Patent No. 7359108 |
|--|--|
| 1. A display device having at least one picture element having an optical switch comprising at least one first fluid and a second fluid immiscible with each other above a first support plate, the second fluid being electro-conductive or polar which display device has driving means for applying to electrodes of the optical switch voltages associated with a range of electro-optical states of the picture element between and including a first extreme state and a second extreme state | 1. A display device having a viewing side and comprising: picture elements having at least one first fluid and a second fluid immiscible with each other within a space between a first transparent support plate facing the viewing side and a second support plate, the second fluid being electroconductive or polar, an intermediate |

| | |
|---|---|
| <p>said driving means providing during selection of a picture element variable voltages to said picture element.</p> | <p>substrate between the first support plate and the second support plate, the intermediate substrate having a reflective surface at the side of the first support plate and being provided with at least one passage between spaces at both sides of the intermediate substrate, and an electrode arranged on the second support plate for introducing flow of the first fluid through said passage.</p> |
|---|---|

The Instant Application, Patent No. **7359108** teaches all of the claim limitations except "an optical switch" and "driving means". However, it would have been obvious to a person having ordinary skill in the art to recognize that Patent No. **7359108** first and second fluids can be alternated positions to vary light as an optical switch and they must be driven and selected by some driving means.

Claim Rejections 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) a patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-3, 18, and 21-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Loxley et al. (US Patent No. 6262833)** in view of **Sato (US Patent No. US 4041481)** and further in view of **Sterling et al. (US Pub. No. 2004/0231987)**.

Regarding Claim 1, (Currently amended) **Loxley et al.** teach a display device having at least one picture element having an optical switch comprising at least one first fluid (Col. 2, Ln. 54) and a second fluid (Col. 2, Ln. 54-55) immiscible with each other above a first support plate (Col. 2, Ln. 38-40, Ln. 50-54), the display device has driving means for applying to electrodes of the optical switch voltages associated with a range of electro-optical states of the picture element (Col. 1, Ln. 58-62) between and including a first extreme state and a second extreme state (Col. 1, Ln. 66-67, Col. 2, Ln. 1-4, FIG. 1).

However, **Loxley et al.** do not teach that the driving means providing during selection of a picture element variable voltages to said picture element prior to applying a fixed voltage to the display device having a non-zero voltage associated with an electro-optical state of the picture element to be set, wherein the variable voltages comprise a set of alternating voltages having one of a mean voltage, a root mean square voltage and an average voltage, substantially equal to the non-zero voltage.

In the same field of endeavor, **Sato** teaches that driving means providing during selection (i.e. **TX1-TX3**, FIG. **7I**) of a picture element (i.e. **C11-C23**, FIGs. **7G-7I**) variable voltages (i.e. erase pulses during **T_E**, Col. **7**, Ln. **19-21**, FIGs. **7G-7I**) to said picture element prior to applying a fixed voltage (i.e. **-V** and **3V** during **T_s**, Col. **7**, Ln. **40-58**, FIG. **7G-7I**) to the display device having a non-zero voltage (i.e. **-V** and **3V** during **T_s**, Col. **7**, Ln. **40-58**, FIG. **7G-7I**) associated with an electro-optical state (i.e. **-V** and **3V** during **T_s** would obviously produce an electro-optical state, Col. **7**, Ln. **40-58**, FIG. **7G-7I**) of the picture element to be set, wherein the variable voltages comprise a set of alternating voltages having one of a mean voltage, a root mean square voltage and an average voltage (i.e. erase pulses during **T_E**, Col. **7**, Ln. **19-21**, FIGs. **7G-7I**), substantially equal to the non-zero voltage (i.e. **-V** and **3V** during **T_s**, Col. **7**, Ln. **40-58**, FIG. **7G-7I**).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to combine **Loxley et al.** teaching of a display device having at least one picture element having an optical switch comprising at least one first fluid and a second fluid immiscible with each other above a first support plate, the display device has driving means for applying to electrodes of the optical switch voltages associated with a range of electro-optical states of the picture element between and including a first extreme state and a second extreme state with **Sato** teaching of driving means providing during selection of a picture element variable voltages to said picture element prior to applying a fixed voltage to the display device having a non-zero voltage associated with an electro-optical state of the picture element to be set, wherein the

variable voltages comprise a set of alternating voltages having one of a mean voltage, a root mean square voltage and an average voltage, substantially equal to the non-zero voltage *in order to benefit of* improving image quality by having a display device comprising at least one picture element, an optical switch consisting at least two immiscible fluids above a first support plate, driving means for applying to electrodes of the optical switch voltages associated with a range of electro-optical states, wherein the driving means providing variable voltages including fixed voltage and non-zero voltage associated with an electro-optical state, wherein the variable voltages comprising a set of alternating voltages including a mean voltage, a root mean square voltage, and an average voltage.

Loxley et al. and **Sato** teach the above display device and driving means.

However, **Loxley et al.** and **Sato** do not teach that the second fluid being electro-conductive or polar.

In the same field of endeavor, **Sterling et al.** teach the second fluid being electro-conductive or polar (i.e. **118a**, [0075], FIG. 16B).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to combine **Loxley et al.** and **Sato** teaching of a display device structures and the driving means having variable voltages with **Sterling et al.** teaching of the second fluid being electro-conductive or polar *in order to benefit of* reducing the cost and parts (i.e. polar particles) and simplifying the design and/or manufacturing process by having display device structures and the driving means having variable voltages, wherein the second fluid being electro-conductive or polar.

Regarding Claim 2, (Previously presented) the display device according to claim 1 wherein **Loxley et al.** teach the fluids within a space between a first transparent support plate and a second support plate (Col. 5, Ln. 58-68, Col. 6, Ln. 1-12, FIG. 1).

Regarding Claim 3, (Currently amended) the display device according to claim 1 in which **Sato** teaches the variable voltages comprise a set of alternating voltages (i.e. erase pulses during T_E , Col. 7, Ln. 19-21, FIGs. 7G-7I) having a mean value substantially equal to the non-zero voltage associated with an electro-optical state of the picture element to be set (i.e. $-V$ and $3V$ during T_s , Col. 7, Ln. 40-58, FIG. 7G-7I).

Regarding Claim 18, (Previously presented) the display device according to claim 1 wherein **Loxley et al.** teach the variable voltage includes one of the first and second extreme states (Col. 5, Ln. 44-68, Col. 6, Ln. 1-12, FIGs. 1 & 2).

Regarding Claim 21, (New) **Loxley et al.**, **Sato**, and **Sterling et al.** teach the display device according to claim 1.

Although **Sato** does not explicitly teach that the variable voltages have an amplitude at a beginning of the variable voltages and smaller amplitude at an end of the variable voltages prior to applying the fixed voltage.

However, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to recognize **Sato's** teaching of applying different magnitudes of erase pulses to the X and Y electrodes (Figs. 7A-7F) would produce an amplitude at a beginning of the variable voltages and smaller amplitude at an end of the variable voltages prior to applying the fixed voltage for the benefit of improving the response time of the display element.

Regarding Claim 22, (New) **Loxley et al.**, **Sato**, and **Sterling et al.** teach the display device according to claim 1.

Although **Sato** does not explicitly teach that the variable voltages have decreasing pulse time periods prior to applying the fixed voltage.

However, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to recognize **Sato's** teaching of applying different frequencies of erase pulses to the X and Y electrodes (Figs. 7A-7F) would produce variable voltages with decreasing pulse time periods prior to applying the fixed voltage.

Response to Arguments/Remarks/Amendments

5. Applicant's arguments with respect to Claims 1-3 and 18 have been considered but are moot in view of the new ground(s) of rejection.
6. Applicant's arguments filed 06/29/2009 concerning Restriction have been fully considered but they are not persuasive as discussed in previous Actions. The requirement is still deemed proper and is therefore made FINAL.
7. Claims 4-6 and 8-14 are withdrawn.
8. Claims 7, 15-17, and 19-20 are canceled.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: Zimmermann (US Patent No. 4187160).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to VINH T. LAM whose telephone number is (571)270-3704. The examiner can normally be reached on M-F (7:00-4:30) EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amare Mengistu can be reached on (571) 272-7674. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Vinh T Lam/
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